

Sequence Listing

<110> KIM, Bum-Joon
BIOMEDLAB CORPORATION

<120> PRIMERS FOR AMPLIFYING HSP 65 GENE OF MYCOBACTERIAL SPECIES, HSP
65 GENE FRAGMENTS AND METHOD OF IDENTIFYING MYCOBACTERIAL SPECIES
WITH THE SAME

<130> OPP021096KR

<150> KR 10-2002-0004297

<151> 2002-01-24

<150> KR 10-2002-0011648

<151> 2002-03-05

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<170> KopatentIn 1.71

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<211> 604

<212> DNA

<213> Mycobacterium abscessus

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Sequence Listing

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<211> 604

<212> DNA

<213> *Mycobacterium africanum*

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<212> DNA

<213> *Mycobacterium asiaticum*

Sequence Listing

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<210> 4
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 <212> DNA
 <213> *Mycobacterium aichiense*

<400> 4

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Sequence Listing

cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt cgaacacctt	360
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 <212> DNA
 <213> Mycobacterium avium

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Sequence Listing

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 <212> DNA
 <213> Mycobacterium bovis

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 cgtc 604

<210> 7
 <211> 604
 <212> DNA
 <213> Mycobacterium bovis BCG

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Sequence Listing

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 <212> DNA
 <213> Mycobacterim celatum Type 1

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Sequence Listing

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 <213> Mycobacterium celatum TypeII

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<210> 10
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Sequence Listing

<212> DNA

<213> *Mycobacterium chelonae*

<400> 10

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<210> 11

<211> 604

<212> DNA

<213> *Mycobacterium chitae*

<400> 11

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Sequence Listing

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 <212> DNA
 <213> Mycobacterium microti

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Sequence Listing

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cgtc 604

<210> 13

<211> 604

<212> DNA

<213> *Mycobacterium flavescens*

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ggtc 604

<210> 14

<211> 604

<212> DNA

<213> *Mycobacterium fortuitum* 6841

<400> 14

Sequence Listing

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Sequence Listing

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Sequence Listing

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 <212> DNA
 <213> *Mycobacterium gastr*

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<210> 18
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 <212> DNA
 <213> *Mycobacterium genavense*

<400> 18
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Sequence Listing

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Sequence Listing

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 <213> Mycobacterium haemophilum

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cgaggcgatg gacaaggctg gcaacgagg cgatcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggcat gcggttcgat aagggtaca tctcgggcta	420
cttcgtcacc gacgccgagc gccaggaagc cgtcctggag gacccctaca tcctgctggt	480
cagctccaag gtgtcgaccg tcaaggacct gctgccactg ttggagaagg tcatccaggc	540
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cgtc	604

<210> 21
 <211> 603
 <212> DNA

Sequence Listing

<213> Mycobacterium interjectum

<400> 21

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ggcctgcgca acgtcgggc cggcgccaac ccgccggcgc tcaagcgcg catcgaaaag	180
gccgtcgaga aggtcaccga gaccctgctg aagtcggcca aggatgtcga gaccaaggag	240
cagatcgccg cgaccgccgc gatctccgcg ggcgaccagt cgatcggcga cctcatcgcc	300
gaggcgatgg acaaggctcg caacgagggc gtcacaccg tcgaggagtc caacaccttc	360
ggcctgcagc tcgagctcac cgaggcatg cggttcgaca agggctacat ctggggctac	420
ttcgtcaccg acgccgagcg tcaggaagcg gtcctcgagg acccctacat cctgctggtc	480
agctcgaagg tgtcgacggt caaggacctg ttgccgtgc tggagaaggt catccaggcc	540
ggcgagccgc tgttgatcat cgccgaggac gtcgagggcg aggcgctgtc caccctggtc	600
gtc	603

<210> 22

<211> 604

<212> DNA

<213> Mycobacterium intermedium

<400> 22

ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtgcca agaagacgga	60
cgacgtcgcc ggtgacggca ccacgacggc caccgtgctc gccaggcgc tggcgcgga	120
gggtctgcgc aatgtcgctg ccggtgcaa cccgctgagc ctgaagcgcg gtatcgagaa	180
ggcagtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggctc agaccaagga	240

Sequence Listing

ccagatcgct gccaccgcag cgatttcgc gggggaccag tcgatcggcg acctgatcgc	300
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cggcctgcag cttgagctca ccgaggggat gcggttcgac aagggttaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc cgtcctggaa gacccgtaca tcctgctggt	480
cagctccaag gtctcgacgg tcaaggacct gctcccgctg ctggagaagg tcattcaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgtga gcaccctggt	600
cgtc	604

<210> 23
 <211> 604
 <212> DNA
 <213> Mycobacterium intracellulare

<400> 23 ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
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ccagatcgct gccaccgcgg cgatttcgc gggcgaccag tcgatcggcg acctcatcgc	300
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cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcctga gcaccctggt	600

Sequence Listing

cgtc 604

<210> 24

<211> 604

<212> DNA

<213> *Mycobacterium kansasii* Type I

<400> 24

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gggcctgctc aacgtcgctg ccggcgccaa cccgctgggc ctcaagcgcg gcatcgagaa 180

ggccgtcgag aaggtcaccg agacgtgctt caaggcgcc aaggaggtcg agaccaagga 240

gcagatcgct ggcgaccgct ccattctcgc cggcgaccag tcgatcgctg acctgatcgc 300

cgaggcgatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt 360

cggcctgcaa ctcgagctca ccgagggcat gcggttcgac aagggttaca tctccggcta 420

cttcgtcacc gacgcccagc gtcaggaagc ggttctggag gacccctaca tctgctggt 480

cagctcgaag gtatcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccaggc 540

cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt 600

cgtc 604

<210> 25

<211> 604

<212> DNA

<213> *Mycobacterium kansasii* Type II

<400> 25

ggaggacccg tacgagaaga tcggcgccga gctggtaag gaagtcgcca agaagaccga 60

Sequence Listing

cgacgtcgcc ggcgacggca ccaccacggc cactgtgctc gcgcaggcgt tggtaaaga	120
gggcctgcgc aacgtgcgg ccggcgccaa cccactgggc ctgaagcgcg gcatcgagaa	180
ggcagtcgag aaggtcaccg agacgtgct caaggcgcc aaggaggtcg agaccaagga	240
gcagatcgct gccaccgcg ccattctcgc gggtagaccg tcgacggcg acctgatcgc	300
cgaggcgatg gacaaggtgg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggtat gcggttcgac aagggtaca tctccggcta	420
cttcgtcacc gacgcgcgac gtcaggaagc agttctggag gaccctaca tctgctggt	480
cagctccaag gtgtccaccg tcaaggacct gctgcgctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt	600
cgtc	604

<210> 26
 <211> 604
 <212> DNA
 <213> Mycobacterium kansasii Type III

<400> 26	
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gggcctgcgc aacgtggcgg ccggcgccaa cccgctgggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacctgtt caagggtgcc aaggaggtcg agaccaagga	240
gcagatcgcg gccaccgcg ccattctcgc cggtagaccg tcgattggcg acctgatcgc	300
cgaggcgatg gacaaggtag gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt	360

Sequence Listing

aggcctgcag ctcgagctca ccgagggat gcgctttgac aagggtaca tctccggcta	420
cttcgtcacc gacgccgagc gtcaggaagc agtgctggaa gaccctaca tcctgctggt	480
cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggg gaggccttga gcaccctggt	600
cgtg	604

<210> 27
 <211> 604
 <212> DNA
 <213> Mycobacterium leprae

<400> 27 ggaggacccg tacgagaaga ttggcgctga gttggtcaag gaagtcgcca agaagacaga	60
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gggcctacgc aacgtcgcg cggcgccaa cccgctaggt ctcaagcgtg gcacgagaa	180
agctgtcgat aaggtaactg agactctgct caaggacgct aaggaggtcg aaaccaagga	240
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cgaggcgatg gacaaggttg gcaacgaggg tgttatcacc gtcgaggaat ccaacacctt	360
cggctctgcag ctcgagctca ccgaggaat gcggttcgac aagggtaca ttccgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc tgcctagag gagccctaca tccttctggt	480
cagctccaaa gtgtctaccg tcaaggacct gctgccgctg ctgagaagg tcatccaggc	540
cggcaagtcg ctgctgatca ttgctgagga tgtcgagggg gaggcgttgt ctaccctggt	600
cgtc	604

Sequence Listing

<210> 28
 <211> 604
 <212> DNA
 <213> *Mycobacterium malmoeense*

<400> 28
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 ggcggtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggctc agaccaagga 240
 gcagatcgcc gcgaccgccg cgatctcggc gggcgaccag tcgatcggcg acctgatcgc 300
 cgaggcgatg gacaaggctc gcaacgaggg cgtcctcacc gtcgaggagt ccaacacctt 360
 cggcctgcag ctcgagctca ccgagggcat gcggttcgac aagggtaca tctcgggcta 420
 ctctgctacc gaccccgagc gtcaggaagc ggtcctggag gaccctaca tcctgctggt 480
 cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcattcaggc 540
 cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctct ccaccctggt 600
 cgtc 604

<210> 29
 <211> 604
 <212> DNA
 <213> *Mycobacterium marinum*

<400> 29
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 cgacgtggcc ggtgacggca cgacgacggc caccgtgctg gccaggcgc tggtaagga 120
 aggcctgcgc aacgttgcgg ccggtgccaa cccgctcggc ctgaagcgcg gcatcgagaa 180

Sequence Listing

ggcagtcgag aaggtcaccg agaccttgct caagtcggcc aaagaggtcg agaccaagga	240
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cgaggcgatg gacaaggtgg gcaacgaggc cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggggat gcggttcgac aagggctaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc ggtcctggag gaccctaca tcctgctggt	480
cagttccaag gtgtccaccg tgaaggacct gctgccgctg ctggagaagg tcattcaggg	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt	600
cgtc	604

<210> 30
 <211> 604
 <212> DNA
 <213> Mycobacterium mucogenicum

<400> 30 ggaggacccg tacgagaaga tcggcgctga gctggtcaag gaagttgcc aagaagacgga	60
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aggcctgcgc aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag gctgtcacca agggcctgct ggcttcgcc aaggaggtcg agaccaagga	240
gcagatcgct gccaccgccc ggatctcggc cggtgaccag tccatcgcg acctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggc tgtcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggat gcggttcgac aagggctaca tctcgggcta	420
cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gacccttca tcctgctggt	480

Sequence Listing

cagctcgaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc 540
 gggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt 600
 cgtc 604

<210> 31
 <211> 604
 <212> DNA
 <213> Mycobacterium neoaurum

<400> 31
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 aggtctgcgc aacgtcgcg cggcgccaa cccctcggc ctgaagcgcg gcatcgagaa 180
 ggccgtcgcg gccgtcaccg agcgctgct ctcgaccgcc aaagaggtcg agaccaagga 240
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 cggaagccg ttgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt 600
 ggtc 604

<210> 32
 <211> 604
 <212> DNA
 <213> Mycobacterium nonchromogenicum

Sequence Listing

<400> 32
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 aggcctgcgc aacgtggccg ccggcgccaa cccgtgggt ctgaagcgcg gcatcgagaa 180
 ggccgttgag aaggtcacct cgaccctgct ggcttcggcc aaggaggtcg agaccaagga 240
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 cgaggccatg gacaaggctg gcaacgaagg tgtcatcacc gtcgaggagt ccaacacctt 360
 cggcctgcag ctggagctca ccgagggcat gcgcttcgac aagggtaca tctcgggtta 420
 cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gaccctaca tcctgctggt 480
 cagctcgaag atctcgaccg tcaaggacct gctgcccttg ctggagaagg tcatccagtc 540
 cggaagccg ttgtgatca tcgccgagga cgtcgagggc gaggcctgt cgaccctggt 600
 cgtg 604

<210> 33
 <211> 604
 <212> DNA
 <213> Mycobacterium paratuberculosis

<400> 33
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 cgacgtcgcc ggtgacggca cgacgacggc cacggtgctc gccagggcgt tggcccgca 120
 gggcctgcgc aacgtcgcg ccggcgccaa cccgtgggt ctcaagcgcg gcatcgagaa 180
 ggccgtcgag aaggtcacct agaccctgct caagtcggcc aaggaggtcg agaccaagga 240
 ccagatcgct gccaccggcg ccattctccgc gggcgaccag tcgatcgcg acctgatcgc 300

Sequence Listing

cgaggcgatg gacaaggctg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggggtat gcggttcgac aaggggtaca tctcgggcta	420
cttcgtcacg gacgccgagc gtcaggaagc ggtcctcgag gacccgttca tcctgctggt	480
cagctccaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcctgt ccaccctggt	600
cgtc	604

<210> 34
 <211> 604
 <212> DNA
 <213> Mycobacterium phlei

<400> 34 cgaggatccg tacgagaaga tcggcgccga gctggtcaaa gaggtcgcca agaagaccga	60
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gggtctgcgc aacgttgccg ccggcgccaa cccgatggct ctgaagcgcg gtatcgagaa	180
ggccgtcgag aaggtcaccg agaccctgct gaagtcggcc aaggaggtcg agaccaagga	240
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cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggtat gcggttcgac aagggctaca tctcgggcta	420
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Sequence Listing

cgtag 604

<210> 35

<211> 604

<212> DNA

<213> *Mycobacterium peregrinum*

<400> 35

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cgacgtcgcg ggtgacggca ccaccaccgc caccgttctg gcccaggccc tggttcgca 120

aggtctgcgc aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa 180

ggctgtcgag aaggtcaccg agaccctcct gaagtccgcc aaggaggtag agaccaagga 240

gcagatcgct gccaccgccg gtatctccgc cggagaccag tccatcggcg acctgatcgc 300

cgaggccatg gacaaggtag gcaacgaggg tgtcatcacc gtcgaggaga gcaacacctt 360

cgggctgcag ctggagctca ccgagggcat gcgcttcgac aagggtaca tctcgggcta 420

cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt 480

cagctcgaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc 540

cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt 600

ggtag 604

<210> 36

<211> 604

<212> DNA

<213> *Mycobacterium scrofulaceum*

<400> 36

ggaggacccg tacgagaaga tcggcgccga gctgggtcaag gaagtcgcca agaagaccga 60

Sequence Listing

cgacgtcgcc ggtgacggca cgacgacggc cacggtgctg gccagggcg tggtcaagga	120
gggcctgcgc aacgtcgcgg cgggcgcca cccgctgagc ctcaagcgcg gcatcgagaa	180
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cgaggcgatg gacaaggctg gcaacgagg cgatcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggcat gcggttcgac aagggtaca tctcgggcta	420
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cgtc	604

<210> 37
 <211> 604
 <212> DNA
 <213> Mycobacterium senegalense

<400> 37	
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cgaggccatg gacaaggctg gcaacgagg tgtcatcacc gttgaggagt ccaacacctt	360
cgggctgcag ctcgagctca ccgagggtat gcgcttcgac aagggtaca tctcgggtta	420

Sequence Listing

cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gatccctgca tcctgctcgt	480
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cggaagccg gtgctgatca tcgccgagga cgtcgagggt gaggccctgt cgaccctggt	600
ggtc	604

<210> 38
 <211> 604
 <212> DNA
 <213> *Mycobacterium shimoidei*

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cgacgtcgcc ggtgacggca ccaccaccgc caccgtgctg gccagggcgc tgggccacga	120
ggggctgcgc aacgtcgcg cgggtgcca cccgtcagc ctgaaacgcg gtatcgagaa	180
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cggcctgcag ctcgagctca ccgagggtat gcggttcgac aagggttaca ttctgggtta	420
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cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcatgcaggc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggctttga gcaccctggt	600
cgtc	604

<210> 39

Sequence Listing

<211> 604
 <212> DNA
 <213> *Mycobacterium simiae*

<400> 39
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 ggccgtcgaa aaggtcaccg agacgtgct gaagtcggcc aaggatgtcg agaccaagga 240
 ccagatcgct gccaccgccc cgatttccgc gggcgaccag tcgatcggcg acctgatcgc 300
 cgaggcgatg gacaaggctg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt 360
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 ctctgtcacc gacgccgagc gtcaggaagc cgtcctggag gacccttca tctgtctggt 480
 cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccaggc 540
 cggaagccc ctgctgatca tcgccgagga cgtcgagggc gaggcgctga gcaccctggt 600
 cgtc 604

<210> 40
 <211> 604
 <212> DNA
 <213> *Mycobacterium smegmatis*

<400> 40
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 cgatgtcgct ggcgacggca ccaccaccgc caccgtcctg gtcaggccc tggttcgca 120
 aggcctgcgc aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa 180

Sequence Listing

ggccgtcgag aaggtcaccg agaccctgct gaagtccgcc aaggagggtgg agaccaagga	240
gcagatcgct gccaccgccc gtatctccgc cggtgaccag tccatcggcg acctgatcgc	300
cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggtat gcgcttcgac aagggttaca tctcgggtta	420
cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gatccctaca tcctgctggt	480
cagctcgaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt	600
ggtc	604

<210> 41
 <211> 604
 <212> DNA
 <213> Mycobacterium szulgai

<400> 41	
ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagttgcc aagaagaccga	60
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gggcctgcgc aacgtagcgg ccggcgccaa cccgctgggt ctcaagcgcg gcatcgagaa	180
ggccgtcgag aagatcaccg agaccctgct caagtcggct aaggacgtcg agaccaagga	240
gcagatcgcg gccaccgccc ccatctccgc gggcgaccag tcgatcggcg acttgatcgc	300
cgaggcgatg gacaaggctg gcaatgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggcat gcggttcgac aagggttaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaggc cgtcctcgag gacccttaca tcctgttgggt	480
cgctccaag gtgtcgacgg tcaaggacct gttgccgctg ctggagaagg tcatccaggg	540

Sequence Listing

cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcttga gcaccctggt 600

cgtc 604

<210> 42

<211> 604

<212> DNA

<213> *Mycobacterium terrae*

<400> 42

ggaggacccc tacgagaaga tcggcgccga gctgggtcaaa gaggtcgcca agaagaccga 60

cgatgtcgcc ggtgacggca ccaccacggc caccgtgctg gcacaggcgc tggtaagga 120

aggcctgcgc aacgtggccg ccggcgccaa cccgctggcc ctgaagcgcg gcacgagaa 180

ggccgtcgag aaggtctccg agaccctgct gaaggacgcc aaggaggtcg agaccaagga 240

gcagatcgcg gctaccgccc ggatctccgc gggcgaccag tccatcggtg acctgatcg 300

cgaggcgatg gacaaggtcg gcaacgaggg tgatcatcacc gtcgaggagt ccaacacctt 360

cggcctgcag ctggagctca ccgaggggtat gcgcttcgac aagggttaca tctcggtta 420

cttcgtcacc gacgccgacc gtcaggaagc ggttctcgag gaccctaca tctgctggt 480

cagctccaag atctcgacgg tcaaggacct gctccactg ctggagaagg tcattcaggg 540

cggtaaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcctgt ccaccctggt 600

ggtc 604

<210> 43

<211> 604

<212> DNA

<213> *Mycobacterium thermoresistibile*

Sequence Listing

<400> 43
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 aggtttgcgc aacgtcgccg cgggggcca cccgctcgct ctgaagcgc gcacgcggagc 180
 cgctgtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggtcg agaccaagga 240
 gcagatcgcc aacaccgccg cgatctcgcc cggcgaccag cagaccggtg agctgatcgc 300
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 ctctgtgacc gacgcggagc ggcaggaagc cgttctggag gatccctaca tcctgctggt 480
 cagctcgaag gtctcgactg tcaaggatct gctgccgctg ctggagaagg tcatccagtc 540
 cggcaggccg ctgctgatca tcgccgagga cgtcgaaggc gaggcgctgt cgaccctggt 600
 cgtc 604

<210> 44
 <211> 604
 <212> DNA
 <213> Mycobacterium triviale

<400> 44
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 gggcctgcgc aacgtcgccg cgggcgcca cccgatgggc ctgaagcgc gcacgcaggc 180
 ggccaccgag aagatcgccg agaccctgct caaggcgcc aaagggtg agaccaagga 240
 gcagatcgct gccaccgccg ggatctccgc cggggacagc tccatcggtg agctgatcgc 300

Sequence Listing

cgaggcgatg gacaagggtcg gcaacgaggg tgtcatcacc gtcgaggagg cccagacctt	360
cggcctgcag ctcgagctca ccgaggggtat gcggttcgac aagggtaca tctccggcta	420
cttcgtcacc gacgccgagc gtcaggaggg cgtgctggag gaccctaca tcctgctggt	480
gtccggcaag gtgtccaccg tcaaggacct gcttccgctg ctggagaagg tcatccagtc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt cgaccctggt	600
ggtc	604

<210> 45
 <211> 604
 <212> DNA
 <213> Mycobacterium tuberculosis

<400> 45 ggaggatccg tacgagaaga tcggcgccga gctggtcaaa gaggtagcca agaagaccga	60
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gggcctgcgc aacgtcgcg ccggcgccaa cccgctcggt ctcaaacgcg gcatcgaaaa	180
ggccgtggag aaggtcaccg agaccctgct caaggcgcc aaggaggctg agaccaagga	240
gcagattgct gccaccgag cgatttcggc gggtgaccag tccatcggtg acctgatcgc	300
cgaggcgatg gacaagggtg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
tgggctgcag ctcgagctca ccgaggggtat gcggttcgac aagggtaca tctcgggta	420
cttcgtgacc gaccggagc gtcaggaggg ggtcctggag gaccctaca tcctgctggt	480
cagctccaag gtgtccactg tcaaggatct gctgccgctg ctcgagaagg tcatcgagc	540
cggtaaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt	600
cgtc	604

Sequence Listing

<210> 46
 <211> 604
 <212> DNA
 <213> *Mycobacterium ulcerans*

<400> 46
 ggaggacccg tacgagaaga ttggcgctga gctgggtcaag gaagttgccca agaagaccga 60
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 aggcctgcgc aacgttgctg ccggtgccaa cccgctcggc ctgaagcgcg gcacgcagaa 180
 ggacgtcgag aaggtcacgc agaccctgct caaatcggcc aaagaggtcg agaccaagga 240
 gcagatcgcg gcgaccgcag ccacgtcgcg cggcgaccag tcgatcggcg acctgatcgc 300
 cgaggcgatg gacaaggtgg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt 360
 cggcctgcag ctcgagctca ccgaggggat gcggttcgac aagggctaca tctcgggcta 420
 cttcgtcacc gacgccgagc gtcaggaagc ggtcctggag gacccctaca tctcgtcgtt 480
 cagctccaag gtgtccaccg tcaaggacct gctgccgctg ctggagaagg tcattcaggg 540
 cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt 600
 cgtc 604

<210> 47
 <211> 604
 <212> DNA
 <213> *Mycobacterium vaccae*

<400> 47
 ggaggacccg tacgagaaga tcggcgctga gctgggtcaaa gaggtcgcca agaagaccga 60
 cgacgtcgcg ggcgacggta ccaccaccgc caccgtgctc gctcaggctc tggttcgcg 120

Sequence Listing

aggcctgcgc aacgtcgag ccggcgccaa cccgctcggc ctcaagcgtg gcatcgagaa	180
ggctgtcgag gctgtcacc agtcgtgtgt gaagtcggcc aaggaggctg agaccaagga	240
gcagatttct gccaccgcg cgatctccgc cggcgacacc cagatcggcg agtcatcgc	300
cgaggccatg gacaaggtcg gcaacgaggg tgatcatcacc gtcgaggagt cgaacacctt	360
cggcctgcag ctcgagctca ccgaggggtat gcgcttcgac aagggttaca tctcgggtta	420
cttcgtgacc gacgccgagc gccaggaagc cgtcctggag gatccctaca tcctgctggt	480
cagctccaag gtgtcgaccg tcaaggatct gctcccgtg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccctgt ccacgctggt	600
ggtc	604

<210> 48
 <211> 604
 <212> DNA
 <213> Mycobacterium wolinskyi

ggaggaccg tacgagaaga tcggcgctga gctggtcaaa gaggtcgcca agaagaccga	60
cgacgtcgcc ggcgacggca ccaccaccgc caccgttttg gccaggctc tggttcgga	120
aggtctgcgc aacgtcgcg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgtgt gaagagcgcc aaggagggtg agaccaagga	240
gcagatcgt gccaccgcg gtatctccgc cggtgaccag tccatcggcg acctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggg tgatcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggtat gcgcttcgac aagggttaca tctcgggtta	420

Sequence Listing

cttcgtgacc gacgccgagc gtcaggaagc cgtcctcgag gatccctaca tcctgctggt	480
cagctcgaag gctcgcaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccctgt cgaccctggt	600
ggtc	604

<210> 49
 <211> 604
 <212> DNA
 <213> Mycobacterium parafortuitum

<400> 49 ggaggacccg tacgagaaga tcggcgctga gctggtcaaa gaggtcgcca agaagaccga	60
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aggtctgcgc aacgtcgcag ccggcgccaa cccgctcggc ctcaagcgtg gcatcgagaa	180
ggctgtcgag gctgtcacc cagggtctgt gaagtcggcc aaggaggctg agaccaagga	240
gcagatcgct gccaccgccc cgatctccgc cggcgacacc cagatcggcg agctcatcgc	300
cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt cgaacacctt	360
cggcctgcag ctggagctca ccgaaggcat gcgcttcgac aagggttaca tctcgggtta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca ttctgctggt	480
cagctccaag atctcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt	600
ggtc	604

<210> 50
 <211> 604

Sequence Listing

<212> DNA

<213> *Mycobacterium farcinogenes*

<400> 50

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aggtctgctg aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgct caagagcgcc aaggaggtgg agaccaagga	240
gcagatcgct gccaccgccg gtatctcgc cggtgaccag tccatcggtg acctgatcgc	300
cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggtat gcgcttcgac aagggtaca tctcgggtta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt	480
cagctccaag gtctcgaccg tcaaggatct gctgccgctg ctggagaagg tcatccagtc	540
cggaagccg ctgctgatca tcgccgagga. cgtcgagggc gaagccctgt ccaccctggt	600
ggtc	604

<210> 51

<211> 604

<212> DNA

<213> *Tsukamurella paurometabola*

<400> 51

cgaggatccc tacgagaaga tcggcgccga gctcgtcaag gaggtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gcccaggcgc tcgtgcgcga	120
gggtctgctg aacgtggctg cgggtgcgaa cccgctgggc ctcaagcggg gcatcgagaa	180
ggccgtcgag gccgtgaccg agcacctgct caaggaggcc aaggaggtcg agaccaagga	240

Sequence Listing

gcagatcgt gctaccgcg gcatctcggc cggcgacccc gccatcgggtg agtcatcgc	300
cgaggccatg gacaagggtcg gcaaggaagg cgtcatcacc gtcgaggaga gcaacacctt	360
cggctctccag ctggagctca ccgagggcat gcgcttcgac aagggttca tctcgggcta	420
cttcgccacc gacgccgagc gtcaggaggc cgtgctcgag gacgcctaca tcctgctcgt	480
gtcgagcaag atctcgaccg tgaaggacct gctgccgctg ctggagaagg tcatccagtc	540
gggcaagccg ctcgcatca tcgccgagga cgtcgagggc gaggccctgt cgacgtcat	600
cgtc	604

<210> 52
 <211> 604
 <212> DNA
 <213> Tsukamurella tyrosinosolvens

<400> 52	
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gggcctgcgc aacgtggccg cgggcgcgaa cccgctgggc ctcaagcggg gcatcgagaa	180
ggccgtcgag gccgtctccg agcacctgct gaagcccgcc aaggaggtcg agaccaagga	240
gcagatcgt gctaccgcg gcatctcggc cggcgacccc gccatcgggtg agtcatcgc	300
cgaggccatg gacaagggtcg gcaaggaagg cgtcatcacc gtcgaggaga gcaacacctt	360
cggcctccag ctggagctca ccgagggcat gcgcttcgac aagggttca tctcgggcta	420
cttcgccacc gacgccgagc gtcaggaggc cgtgctcgag gacgcctacg tgctgctcgt	480
cgccggcaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540

Sequence Listing

gggcaagccg ctcgcatca tcgccgagga cgtcgagggc gaggccctgt cgacgtcat 600

cgtc 604

<210> 53

<211> 604

<212> DNA

<213> *Tsukamurella pulmonis*

<400> 53

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cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gccagggcg tcgtgcgcga 120

gggtctgcgg aacgtggccg cgggcgcgaa cccgctgggc ctcaagcggg gcatcgagaa 180

ggcggtcgac gccgtcaccg agcacctgct gaaggccgcc aaggaggctg agaccaagga 240

gcagatcgct gctaccgcgg gcatctcggc cggcgacccc gccatcggtg agtcatcgc 300

cgaggccatg gacaaggctg gcgaggaagg cgtcatcacc gtcgaggaga gcaacacctt 360

cggtctccag ctggagctga ccgagggcat gcgcttcgac aagggttca tctcgggcta 420

cttcgccacc gacgcggagc gccaggaggc cgtcctcgag gacgcctacg tgctgctcgt 480

ctcgggcaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc 540

gggcaagccg ctcgcatca tcgccgagga cgtcgagggc gaggccctgt cgacgtcat 600

cgtc 604

<210> 54

<211> 604

<212> DNA

<213> *Nocardia carnea*

<400> 54

Sequence Listing

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cgacgtcgcg ggcgacggca ccaccaccgc caccgtgctc gccagggcgc tggcgcgga	120
gggtctgcgc aacgtggccg cgggcgcgaa cccgtgggc ctcaagcgca gcatcgagaa	180
ggccgtcgag gccgtgaccg ccaagctgct cgacaccgcc aaggaggtcg agaccaagga	240
gcagatcgcc gccaccgcgg gcatctccgc gggcgacgcg tccatcggtg agctgatcgc	300
cgaggccatg gacaaggctg gcaaggaagg cgtcatcacc gtcgaggaga gcaacacctt	360
cggcctccag ctggagctga ccgagggcat gcgcttcgac aagggctaca tctccggcta	420
cttcgtgacc gatcccgagc gtcaggaagc ggtcctcgag gatccctaca tctgctcgt	480
cggtcgaag gtctccaccg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcctgt cgaccctggt	600
cgtg	604

<210> 55
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> HSPF3

<400> 55	
atcgccaagg agatcgagct	20

<210> 56
 <211> 20
 <212> DNA
 <213> Artificial Sequence

Sequence Listing

<220>

<223> HSPR3

<400> 56

aagggtgccgc ggatcttggt

20